

**REMARKS**

Claims 1-4 and 7-32 are pending herein.

By this Amendment, claims 1, 3, 7, 9-11, 13-17, 20, 21, 23-25, 27, 29 and 31 are amended to more fully distinguish these claims from the cited references. Claims 5 and 6 are canceled. Figs. 1 and 6 are amended to correct typographical errors.

No new matter is added by this Amendment. Support for the language added to the claims is found in the original specification, Figures and claims. In particular, support for the language added to independent claims 1, 11, 21, 25, 27, 29 and 31 is found at, for example, pages 7, 15 and 16 of the specification.

**I. Drawings**

Applicants herein amend Figs. 1 and 6 to correct typographical errors therein. Applicants submit that the drawings meet the requirements of the Patent Office. Notice to this effect is respectfully requested.

**II. Claim Objection**

Claims 17-19 were objected to for an alleged informality. Specifically, the Office Action stated the term "plain" in claim 17 should read "plane." Applicant submits that claim 17, as amended, does not contain the term "plain." Applicant submits that the objection has been overcome. Reconsideration and withdrawal of the objection is thus respectfully requested.

**III. Claim Rejection Under 35 U.S.C. §102(b)**

Claims 1-32 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 5,734,807 (hereinafter "Sumi"). This rejection is respectfully traversed.

Generally speaking, the present application discloses a shooting game machine composed of a game unit body which executes programs of various pre-stored games, and a controller (gun controller) which gives various operational commands to the game unit body.

A significant feature of the present invention is the relationship between the gun controller, having an image sensor with an aimed-at target on an image display, and the game unit body. Namely, when a player operates the gun controller, a CPU in the game machine (or the controller) calculates the position and the attitude of the image plane (to compose the image sensor) relative to the display plane (screen).

The present invention is distinguished from Sumi for at least the following reasons, including the distinguishing features of the gun controller, the range finder, and the virtual plane.

(1) GUN CONTROLLER

Sumi teaches a gun unit composed of a photosensor which senses light emitted from the display (see col. 4, lines 39-48), not an image sensor, as recited in each of claims 1, 11, 15, 21, 25, 27, 29 and 31. Therefore, the output information of the gun controller (gun unit) does not include a player's information such as the position of a player, the attitude of a player and the distance from a player to the display plane. Instead, the gun controller (gun unit) of Sumi includes information of the position of a target point on the display such as the aimed x, y coordinate data S1, S2 and trigger-on/off data S3. See col. 4, line 39 to col. 5, line 22 of Sumi.

Further, the camera disclosed by Sumi does not have the image sensor. Instead, the camera disclosed by Sumi is a virtual camera. The position of the virtual camera is a "viewpoint" in the 3-dimension space. See col. 1, lines 55-58 of Sumi. "In this three-dimensional game device, the polygons which compose the object have three-dimensional coordinate data, on the basis of which the object viewed from a predetermined viewpoint is shown on the display screen." Id. The virtual camera is set by designation of its position, optical axis direction (direction of its lens), image angle, and rotation angle around the optical axis. Namely, the processor carries out the determination of the viewpoint, the determination

of the position and rotation angle about X-,Y-,Z-axes of the object, and the movement of the object. Accordingly, when a player operates the gun controller, for example, such as trigger-on, the object moves in response to predetermined rules, including, for example, a speed of movement or direction of the movement. Sumi further describes that “the virtual planes are set close to the outer surface of the object 20 (at the predetermined position) and data on the virtual planes are stored as position data beforehand in the ROM 18” (emphasis added). See col. 5, lines 59-62 of Sumi.

The gun controller of the present invention, on the contrary, has an image sensor which takes the displayed target image including the characteristic points on the screen. Also, in the present invention, except for the position of the virtual camera for controlling objects, the objects are able to be controlled on the basis of the position of the gun controller (or a player) as a viewpoint. The output of the image sensor has not only the information for the target coordinate on the display, but also the position information of a player and the attitude information of a player with the image plane relative to the display plane. The position of a target point and the attitude parameters of the image plane (image sensor), relative to the display plane, are calculated on the basis of the taken target image including the characteristic points by an image sensor. Also, the attitude of a player (or attitude of an image sensor), the real distance between a player and a display plane, is measured by a range finder.

Accordingly, the present game system can interactively change the viewpoint of the object in response to the movement of a player. The player feels a sense of unity with the object image, making the story of the game system more exciting.

Thus, the composition of the present invention is entirely different from the composition taught by Sumi. That is, more specifically, Sumi fails to teach or suggest an image sensor having an image plane on which an image of the four characteristic points at a predetermined position of the image plane corresponds to a target point; and calculating an

attitude of the image plane relative to the defined plane (or displayed plane) on the basis of the output of the image sensor including the information of the positions of the four characteristic points on the image plane, as recited by each of claims 1, 11, 15, 21, 25, 27, 29 and 31.

## (2) RANGEFINDER

Sumi fails to disclose a rangefinder. Instead, Sumi discloses at col. 7, lines 10-14, "The intersection determining unit 15 sets a virtual plane to be checked (step 203). In this step, for example, it reads data on the coordinates and angle of a virtual plane W1 of the object 20 of Fig. 4 from the ROM 17 and sets the data in a predetermined register area of the processor 15." Further, as described at col. 8, lines 49-52, "The intersection determining unit 15 calculates the distance between the position of a viewpoint and each of the virtual planes W which the projectiles hit (S2121)." Further, when "the intersection determining unit 15 determines whether a virtual projectile has hit the object, it delivers the result of the determination to a shot hole calculating unit 16, the shot hole three dimensional coordinate data is converted by the data processor to data on coordinates viewed from a predetermined viewpoint (or data on coordinate on the monitor). See Sumi at col. 4, line 49 to col. 5, line 9.

Thus, as described above, Sumi teaches that the distance between the viewpoint and display plane is calculated on the basis of the known coordinate by a processor, not measured by the rangefinder as recited in claims 7, 12 and 22.

## 3. VIRTUAL PLANE

The virtual plane of Sumi is similar to the four characteristic points of the present invention with respect to calculating the direction of shooting. However, the purpose and the composition of the present invention are entirely different as that taught by Sumi.

In the present invention, the image including the characteristic points is taken by the image sensor (a part of the composition in the game controller), and the parameter of the

attitude and the position of a target point on the display plane is calculated on the basis of the information of the taken image. Thus, the game system is able to change the object (or the target) according to the position and the attitude parameter of a player relative to the display plane. Therefore, an interactive game story may be possible such as has not been seen in the art.

Nowhere does Sumi teach or disclose this benefit. More specifically, nowhere does Sumi teach or disclose generating a signal to be transmitted to the controller to cause a change in the target depending on the attitude calculated by the processor, as recited by each of claims 1, 11, 21, 25, 27 and 31. Nor does Sumi teach or disclose a signal generator for generating a signal to be transmitted to the image display to cause a change in the image of the target point on the display plane in response to the comparator, as recited by each of claims 15 and 29.

For at least these foregoing reasons, Applicant submits that Sumi fails to teach or suggest the subject matter of claims 1, 11, 15, 21, 25, 27, 29 and 31 or of depending claims 2-4, 7-10, 12-14, 16-20, 22-24, 26, 28, 30 and 32. Reconsideration and withdrawal of the rejection are thus respectfully requested.

**IV. Allowable Subject Matter**

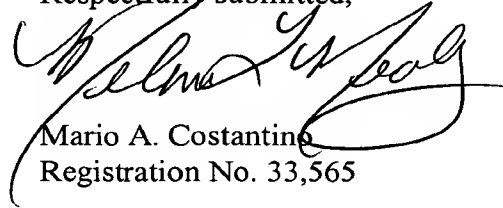
Applicant notes with appreciation that claims 18 and 19 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**V. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-4 and 7-32 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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MAC:MLM:LMS/hs

Attachment:  
Replacement Sheets

Date: February 24, 2004

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<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
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Replacement Sheet

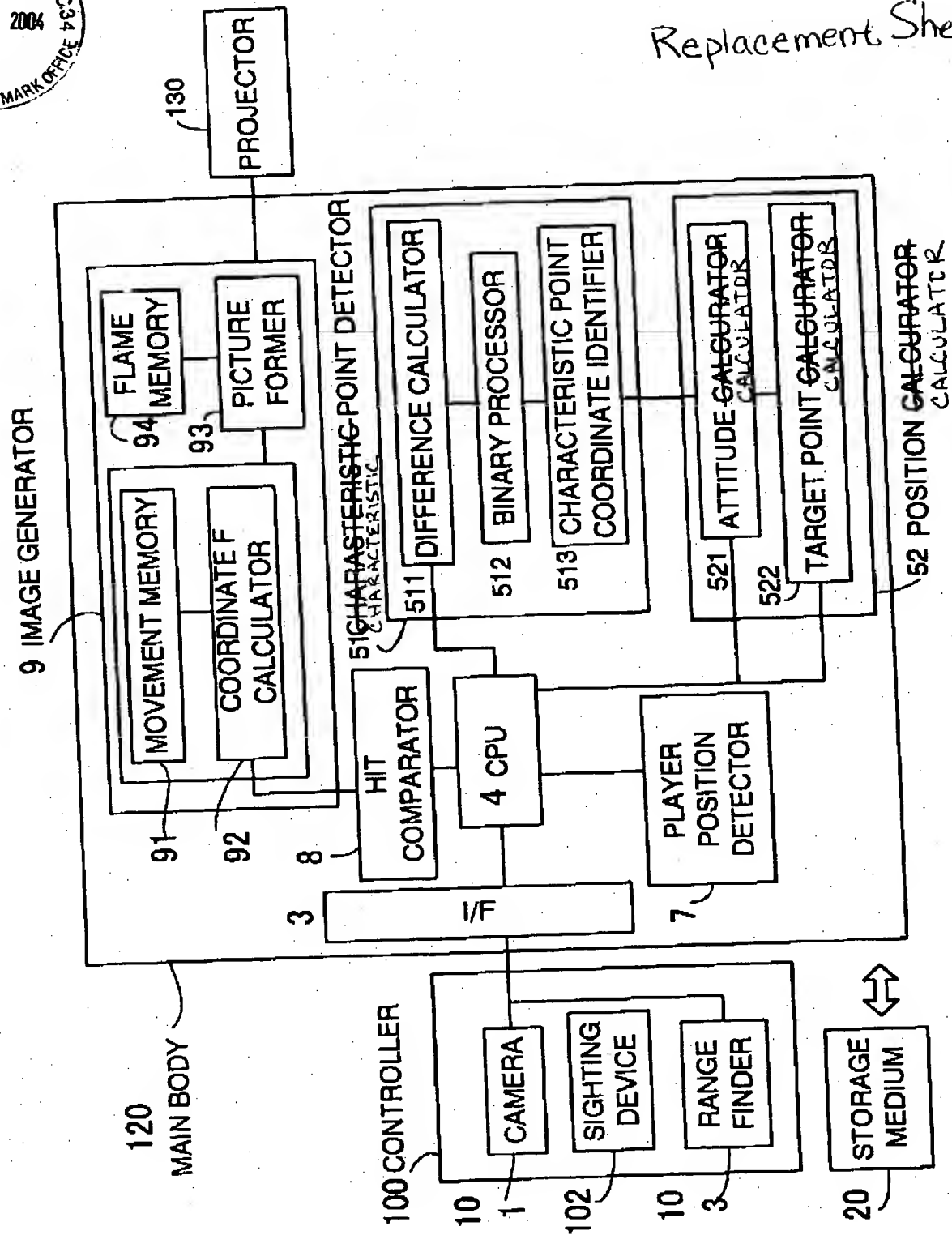


Fig.1



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Replacement  
Sheet

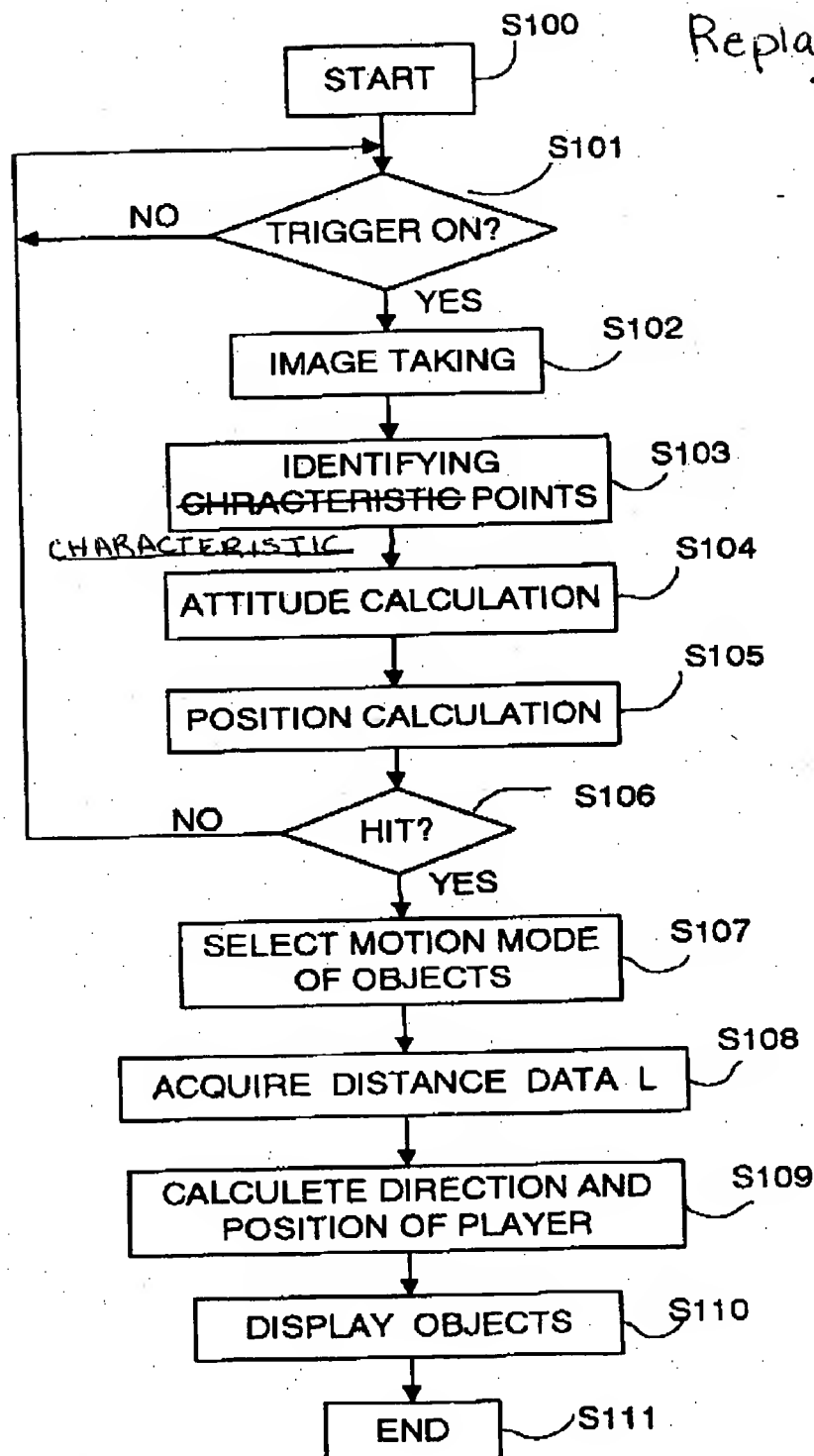


Fig.6